Confirmation No. 4573

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | | |
|---|---|---|---|
| Applicant: | BELLERS | Examiner: | Tran, T. |
| Serial No.: | 09/966,038 | Group Art Unit: | 2622 |
| Filed: | September 28, 2001 | Docket No.: | US010583US (NXPS.570PA) |
| Title: | DYNAMIC SAMPLING | | |

---

## SUPPLEMENTAL APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**Customer No.**
**65913**

Dear Sir:

This Supplemental Appeal Brief is submitted in response to the Notice of Non-Compliant Appeal Brief dated July 8, 2009, regarding Section V of the Appeal Brief and a concise explanation of the subject matter. The Summary of Claimed Subject Matter now references page and line numbers from the originally filed Specification as requested in the Notice. This Appeal Brief replaces the Appeal Brief filed on October 16, 2008.

## I. Real Party In Interest

The real party in interest is NXP Semiconductors. The application is presently assigned of record, at reel/frame nos. 012220/0122 to NXP, B.V., headquartered in Eindhoven, the Netherlands.

## II. Related Appeals and Interferences

While Appellant is aware of other pending applications owned by the above-identified Assignee, Appellant is unaware of any related appeals, interferences or judicial proceedings that would have a bearing on the Board's decision in the instant appeal.

## III. Status of Claims

Claims 1-2, 4, 6-9, 11, 13-16, 18 and 20 stand rejected, and claims 3, 5, 10, 12, 17 and 19 stand objected to as being dependent upon a rejected base claim, but were indicated as containing allowable subject matter. Claims 1-20 are thus presented for appeal, with the understanding that claims 3, 5, 10, 12 and 17 include allowable subject matter (and are thus not discussed separately under the grounds of rejection). A complete listing of the claims under appeal is provided in an Appendix to this Brief.

## IV. Status of Amendments

No amendments have been filed subsequent to the Office Action Response dated August 31, 2007.

## V. Summary of Claimed Subject Matter

As consistent with independent claim 1, example embodiments are directed to a system for dynamic sampling, the system including an input for receiving an analog video signal, a sampling mechanism coupled to the input and a signal analysis unit coupled to the sampling mechanism. For example, FIG. 2A shows an exemplary dynamic sampling system with input at 201 and sampling mechanism 104, and FIG. 2B shows a signal analysis unit 205 (*i.e.*, as implemented with the sampling mechanism), with supporting discussion at page 8:14 through page 10:17 of the specification. The sampling mechanism samples the analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within

the image content contained within the analog video signal. The signal analysis unit is coupled to receive an output of the sampling mechanism, and determines a highest spatial frequency within the image content. The sampling mechanism adjusts the variable (analog) sampling rate (upward and/or downward) over a continuous range as a function of the determined highest spatial frequency within the image content.

As consistent with independent claim 8, other embodiments are directed to a video receiver having an input for receiving an analog video signal, an output for transmitting a digital video signal to a display, a storage system (or other device), and a sampling mechanism and signal analysis unit. See, for example, input 201, sampling mechanism 204 and signal analysis unit 205 shown in FIG. 2A and FIG. 2B, in connection with corresponding discussion at page 7:20 though page 10:17 of the specification. The sampling mechanism is coupled to the input and samples the analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within the image content contained within the analog video signal. The signal analysis unit is coupled to receive an output of the sampling mechanism, and determines a highest spatial frequency within the image content. The variable sampling rate is adjustable both upward and downward over a continuous range as a function of the highest spatial frequency within the image content (*i.e.*, at the sampling mechanism).

As consistent with independent claim 15, a method for dynamic sampling involves receiving and sampling an analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within the image content contained within the analog video signal. A highest spatial frequency within the image content is determined, and the variable sample rate is adjusted both upward and downward over a continuous range as a function of the highest spatial frequency within the image content. See, for example, discussion at page 7:20 though page 10:17, with related examples shown in FIG. 2A and FIG. 2B, which show input 201, sampling mechanism 204 and signal analysis unit 205.

As required by 37 C.F.R. § 41.37(c)(1)(v), a concise explanation of the subject matter defined in the independent claims involved in the appeal is provided herein. Appellant notes that representative subject matter is identified for these claims; however, the abundance of supporting subject matter in the application prohibits identifying all

textual and diagrammatic references to each claimed recitation. Appellant thus submits that other application subject matter, which supports the claims but is not specifically identified above, may be found elsewhere in the application. Appellant further notes that this summary does not provide an exhaustive or exclusive view of the present subject matter, and Appellant refers to the appended claims and their legal equivalents for a complete statement of the invention.

## VI. Grounds of Rejection to be Reviewed Upon Appeal

A. Claims 1-2, 4, 7-9, 11, 14-16, and 18 stand rejected under 35 U.S.C. § 102(b) over Page (U.S. Patent 4,755,795).

B. Claims 6, 13 and 20 stand rejected under 35 U.S.C. § 103(a) over Page (U.S. Patent 4,755,795).

## VII. Argument

All claim rejections rely upon the '795 reference, which involves digital signal processing at a digital sampling rate that is controlled based upon the power of the signal. This digital signal processing approach of the '795 reference is fundamentally different from claim limitations in the instant application directed to variable sampling of an analog signal and its related processing. For example, aspects of the claims are directed to sampling an analog signal utilizing a variable sampling rate with modulation based upon spatial frequencies of an image in the analog signal. The cited '795 reference simply does not provide any correspondence to the claimed analog-based processing system and related method, and fails to discuss the use of spatial frequencies or any video data processing whatsoever. The Office Actions of record appear to have ignored issues relating to the cited references' lack of disclosure of sampling rates for analog signals, and related processing that is specific to analog signals. Moreover, the Section 103 rejection is based upon improper (hindsight) reconstruction of a reference that teaches away from the asserted modification. The following more particularly addresses these matters in addressing each of the aforesaid grounds of rejection and the corresponding claims.

**I. The rejection of claims 1-2, 4, 7-9, 11, 14-16, and 18 under 35 U.S.C. § 102(b) over Page (U.S. Patent 4,755,795) must be reversed because the '795 reference does not disclose limitations as asserted.**

The cited portions of the '795 reference involve digital signal sampling and related processing, which is fundamentally different than the claimed analog signal sampling approach. In short, the Examiner's attempt to equate the analog-to-digital converter 13 with the claimed sampling mechanism is contrary to the specification of the '795 reference and cited portions therein, and fails to show correspondence to the claimed invention. Not only does the converter 13 fail to sample an analog signal at a variable sampling rate as suggested in the Final Office Action (the rate appears to be fixed), the cited sampling rate adjustment occurs *after* the converter 13 and is carried out upon a *digital* signal. For instance, the resampler 17 cited at page 3 of the Final Office Action operates on a digital signal presented after the converter 13 to selectively compress digital data for storage (*see, e.g.*, FIG. 1 and column 2:61 – 3:2). As described at column 2:61-67 and column 3:9-24, this sampling and compression is carried out upon a digital signal, in connection with related digital processing such as the addition of bits. Clearly, the resampler 17 operates on a digital signal and the cited sampling rate adjustment is carried out upon this digital signal.

The Office Action's assertion that the '795 reference adjusts its sampling rate based upon spatial frequencies is also wrong. The cited portions of the '795 reference adjust a (digital signal) sampling rate at the resampler 17 using a comparison of "the overall power of the input signal to the power of a portion of the input signal in a certain bandwidth" (see column 3:26-28). This power-based comparison is to ensure that frequency components are "within the chosen bandwidth" (see column 3:32). The '795 reference's sampling rate adjustment is thus not only carried on a digital signal, it further does not disclose modulating a variable sampling rate "based upon spatial frequencies within the image content" as claimed (see claim 1 and related limitations in other independent claims).

In addition to the above, the cited portions of the '795 reference make no mention whatsoever of video signal processing based upon spatial frequencies of image content or otherwise. Appellant has reviewed the '795 reference and cannot ascertain any discussion of video data processing. The '795 reference therefore does not provide any

correspondence to claim limitations directed to modulating the sampling rate of an analog video signal based upon spatial frequencies of image content within the video.

In view of the above, the '795 reference operates to control the sampling rate of a digital signal, based upon a power – based comparison. The '795 reference therefore does not adjust any sampling rate of a digital signal, does not do so based upon spatial frequencies of an analog signal, and makes no mention whatsoever of video signal processing, related spatial frequencies within an image, and corresponding sampling adjustment. Appellant therefore submits that the rejections of claims 1-2, 4, 7-9, 11, 14-16, and 18 are wholly unsupported and must be reversed.

**II. The rejection of claims 6, 13 and 20 stand rejected under 35 U.S.C. § 103(a) over Page (U.S. Patent 4,755,795) must be reversed because the '795 reference does not disclose limitations as asserted.**

Each of claims 6, 13 and 20 respectfully depend from independent claims 1, 8 and 15, the rejections of which must be reversed for reasons stated above in connection with the first ground of rejection.

Appellant further submits that the rejections of claims 6, 13 and 20 are improper because the Final Office Action has failed to cite teaching or suggestion of limitations indicated as not disclosed in the '795 reference, and because the Examiner's attempt to assert Official Notice is erroneous under the M.P.E.P. and relevant law. As indicated at page 6 in the Final Office Action, the '795 reference does not disclose "the claimed wherein the rate for each segment of the analog video signal sampling is at least twice a highest spatial frequency within content contained by the corresponding segment of the analog video signal." The Final Office Action goes on to assert that this capability "is old and well known in the art" without providing any citation or evidence whatsoever in support of this assertion. As consistent with the requirements of M.P.E.P. §2144.03(B), the Final Office Action's assertion of "Official Notice" regarding these limitations is clearly improper because it fails to provide any technical reasoning underlying such a decision, as required when the taking of Official Notice is unsupported by any evidence. Appellant thus traverses the Examiner's taking of Official Notice and the corresponding rejections.

Appellant also submits that the rejections of claims 6, 13 and 20 are improper because the Final Office Action failed to provide any evidence of motivation for modifying the '795 reference, or to discuss such a modification in any manner. As discussed above, the '795 reference does not disclose video signal processing. The rejected claims include limitations directed to content contained by a segment of an analog video signal, and a sampling rate thereof being at least twice a highest spatial frequency of video content within a segment. These claim limitations are specifically directed to video processing, and approaches involving sampling based upon image content therein. The Final Office Action has provided no explanation as to how the '795 reference would be modified to operate to achieve its data storage (and compression) purposes, based upon the spatial frequency of video content.

Appellant furthermore submits that one of skill in the art would not be motivated to modify the sampling rate of digital data for storage thereof using the spatial frequency of video content in an analog signal as suggested, and that such a modification would undermine the purpose of the '795 reference. As stated in the Abstract, discussion of objects at column 2:7-11 and replete throughout the '795 reference, the purpose of the '795 reference involves adjusting the digital sampling rate of a signal based upon the signal's bandwidth. Modifying the reference to sample an analog signal, rather than a digital signal, and to do so based upon the spatial frequency of image data rather than the bandwidth thus completely undermines the purpose of the '795 reference. Moreover, the '795 reference's sampling of a digital signal based upon the bandwidth of the digital signal and corresponding Fourier transform (*see, e.g.,* column 3:66-4:5) teaches away from the proposed modification, because the modification would result in the sampling of an analog signal, rather than digital, upon which the indicated transform cannot operate .

Applicant submits that the Office Action's failure to provide evidence or rationale for combining the cited references, and the resultant undermining of the purpose of the '795 reference, are improper and contrary to the M.P.E.P. and relevant law. See, for example, M.P.E.P. § 2143.01; *In re Gordon* 733 F.2d 900 (Fed. Cir. 1984); and *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (U.S. 2007). Appellant therefore submits that there is no motivation for combining references as asserted.

In view of the above, Appellant submits that the Section 103 rejections are also improper and must be reversed.

## VIII. Conclusion

In view of the above, Appellant submits that the rejections of claims 1-2, 4, 6-9, 11, 13-16, 18 and 20 are improper. Correspondingly, Appellant believes that the objection to claims 3, 5, 10, 12 and 17 (indicated as including allowable subject matter) are also improper, because these claims respectively depend from one of independent claims 1, 8 and 15, which are believed to be allowable. Appellant therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

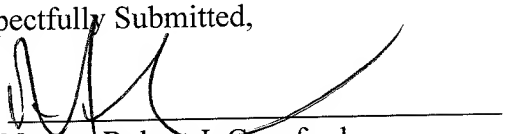
Authority to charge the undersigned's deposit account was provided on the first page of this brief.

*Please direct all correspondence to:*

Corporate Patent Counsel
NXP Intellectual Property & Standards
1109 McKay Drive; Mail Stop SJ41
San Jose, CA 95131

CUSTOMER NO. 65913

Respectfully Submitted,

By: 

Name: Robert J. Crawford
Reg. No.: 32,122
Tel: 651 686-6633 ext. 2300
(NXPS.570PA)

## APPENDIX OF CLAIMS INVOLVED IN THE APPEAL
(S/N 09/966,038)

1. A system for dynamic sampling comprising:

an input receiving an analog video signal; and

a sampling mechanism coupled to the input and sampling the analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within the image content contained within the analog video signal; an output of said sampling mechanism being coupled to a signal analysis unit to determine a highest spatial frequency within the image content; and said variable sampling rate being adjustable both upward and downward over a continuous range as a function of the highest spatial frequency within the image content.

2. The system as set forth in claim 1 wherein a first sampling rate is employed for a first segment of the analog video signal containing content having a first highest spatial frequency and a second sampling rate greater than the first sampling rate is employed for a segment of the analog video signal containing content having a second highest spatial frequency greater than the first highest spatial frequency.

3. The system as set forth in claim 2 wherein the sampling mechanism further comprises:

a plurality of analog filters each receiving the analog video signal; a plurality of analog-to-digital converters each coupled to one of the plurality of analog filters and having settings based upon the corresponding analog filter, each analog-to-digital converter sampling an output of the corresponding analog filter; and

combination logic selecting the output of one of the analog-to-digital converters for each segment of the analog video signal and combining the selected outputs.

4. The system as set forth in claim 2 wherein the sampling mechanism further comprises:

a single analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a fixed rate;

a signal analysis unit analyzing samples from the converter to select a sampling rate for each segment of the analog video signal; and

a downsampling unit retaining samples from the converter for each segment of the analog video signal based upon the corresponding sampling rate selected by the signal analysis unit.

5. The system as set forth in claim 2 wherein the sampling mechanism further comprises:

a first analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a fixed rate sufficient to detect all spatial frequencies of interest within the content contained within the analog video signal;

a second analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a variable rate; and

a signal analysis unit analyzing samples from the first converter to select a sampling rate for each segment of the analog video signal and adjusting the sampling rate of the second converter.

6. The system as set forth in claim 2 wherein the sampling rate for each segment of the analog video signal is at least twice a highest spatial frequency within content contained by the corresponding segment of the analog video signal.

7. The system as set forth in claim 2 wherein the sampling mechanism samples the analog video signal at a first rate and transmits samples for at least one segment of the analog video signal at second rate different than the first rate.

8. A video receiver comprising:

an input receiving an analog video signal;

an output transmitting a digital video signal to a display, a storage system, or another device; and

a sampling mechanism coupled to the input and sampling the analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within the image content contained within the analog video signal; an output of said sampling mechanism being coupled to a signal analysis unit to determine a highest spatial frequency within the image content; and said variable

sampling rate being adjustable both upward and downward over a continuous range as a function of the highest spatial frequency within the image content.

9. The video receiver as set forth in claim 8 wherein a first sampling rate is employed for a first segment of the analog video signal containing content having a first highest spatial frequency and a second sampling rate greater than the first sampling rate is employed for a segment of the analog video signal containing content having a second highest spatial frequency greater than the first highest spatial frequency.

10. The video receiver as set forth in claim 9 wherein the sampling mechanism further comprises:

a plurality of analog filters each receiving the analog video signal;

a plurality of analog-to-digital converters each coupled to one of the plurality of analog filters and having settings based upon the corresponding analog filter, each analog-to-digital converter sampling an output of the corresponding analog filter; and

combination logic selecting the output of one of the analog-to-digital converters for each segment of the analog video signal and combining the selected outputs.

11. The video receiver as set forth in claim 9 wherein the sampling mechanism further comprises:

a single analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a fixed rate;

a signal analysis unit analyzing samples from the converter to select a sampling rate for each segment of the analog video signal; and

a downsampling unit retaining samples from the converter for each segment of the analog video signal based upon the corresponding sampling rate selected by the signal analysis unit.

12. The video receiver as set forth in claim 9 wherein the sampling mechanism further comprises:

a first analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a fixed rate sufficient to detect all spatial frequencies of interest within the content contained within the analog video signal;

a second analog-to-digital converter receiving the analog video signal and sampling the analog video signal at a variable rate; and

a signal analysis unit analyzing samples from the first converter to select a sampling rate for each segment of the analog video signal and adjusting the sampling rate of the second converter.

13. The video receiver as set forth in claim 9 wherein the sampling rate for each segment of the analog video signal is at least twice a highest spatial frequency within content contained by the corresponding segment of the analog video signal.

14. The video receiver as set forth in claim 9 wherein the sampling mechanism samples the analog video signal at a first rate and transmits samples for at least one segment of the analog video signal at second rate different than the first rate.

15. A method dynamic sampling comprising:

receiving an analog video signal;

sampling the analog video signal utilizing a variable sampling rate modulated for segments of the analog video signal based upon spatial frequencies within the image content contained within the analog video signal;

determining a highest spatial frequency within the image content; and adjusting the variable sample rate both upward and downward over a continuous range as a function of the highest spatial frequency within the image content.

16. The method as set forth in claim 15 wherein a first sampling rate is employed for a first segment of the analog video signal containing content having a first highest spatial frequency and a second sampling rate greater than the first sampling rate is employed for a segment of the analog video signal containing content having a second highest spatial frequency greater than the first highest spatial frequency.

17. The method as set forth in claim 16 further comprising:

receiving the analog video signal at each of a plurality of analog filters;

sampling an output of each analog filter utilizing an analog-to-digital converter coupled to the corresponding analog filter and having settings based upon the corresponding analog filter; and

selecting the output of one of the analog-to-digital converters for each segment of the analog video signal and combining the selected outputs.

18. The method as set forth in claim 16 further comprising:

receiving the analog video signal at a single analog-to-digital converter sampling the analog video signal at a fixed rate;

analyzing samples from the converter to select a sampling rate for each segment of the analog video signal; and

retaining samples from the converter for each segment of the analog video signal based upon the corresponding selected sampling rate.

19. The method as set forth in claim 16 further comprising:

receiving the analog video signal at a first analog-to-digital converter sampling the analog video signal at a fixed rate sufficient to detect all spatial frequencies of interest within the content contained within the analog video signal;

receiving the analog video signal at a second analog-to-digital converter sampling the analog video signal at a variable rate; and

analyzing samples from the first converter to select a sampling rate for each segment of the analog video signal and adjusting the sampling rate of the second converter.

20. The method as set forth in claim 16 wherein the sampling rate for each segment of the analog video signal is at least twice a highest spatial frequency within content contained by the corresponding segment of the analog video signal.

## APPENDIX OF EVIDENCE

Appellant is unaware of any evidence submitted in this application pursuant to 37 C.F.R. §§ 1.130, 1.131, and 1.132.

## APPENDIX OF RELATED PROCEEDINGS

As stated in Section II above, Appellant is unaware of any related appeals, interferences or judicial proceedings.